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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/307,044	Duboc et al
Examiner	**Group Art Unit**
Uchendu O. Anyaso	2675

☒ Responsive to communication(s) filed on *Dec 27, 2000*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-59 and 66-130* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-45, 53-59, 66-98, and 115-130* is/are rejected.

☒ Claim(s) *46-52 and 99-114* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. **Claims 1-59** and **66-130** are pending in this action.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-12, 15-21, 28, 29, 40-44, 57-59, 125 and 127** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637).

Regarding **Claims 1, 57, 125 and 127,** *Jones et al* teaches a CRT in Figure 9. However, applicant argues that CRT's do not simultaneously display an image line since CRT's scan each line.

However, flat-panel displays such as plasma and electroluminescent displays do simultaneously display an image line because the column drivers on a flat panel display latch one row of image data at the same time so that when the row strobes, the whole line or row turns on simultaneously or at once. Furthermore, *Jones et al*'s CRT in Figure 9 is modified, and suggest that those skilled in the art will understand that this invention can be used with other self-

luminous displays such as plasma and electroluminescent displays (*see Jones* at column 7, lines 5-9; *see also* Applicant, p.11).

Regarding **Claims 2 and 58**, in addition to reasons described in Claims 1 and 57 respectively, *Jones et al* teaches that the shutter in front of the imaging cell comprises a plurality of segments, each being switchable between a substantially transparent state and a strongly light absorbing state (column 3, lines 14-17). Furthermore, *Jones et al* teaches the transmission of a part of the ambient light while it is in its light transmissive state, and absorbs portions of the ambient while in its light absorptive state (column 4, lines 54-68 *to* column 5, lines 1-29, figures 1a, 1b, 2a, 2b, 7a & 7b).

Regarding **Claim 3**, in addition to reasons described in Claim 2, *Jones et al* teaches a method wherein the shutter transmits a portion of the ambient light being at least 0.1 (column 4, lines 24-30).

Regarding **Claim 4**, in addition to reasons described in Claim 1, *Jones et al* teaches a shutter strip that appears dark when it is in its light-absorptive state (column 4, lines 41-42, figure 1b at 3b).

Regarding **Claim 5**, in addition to reasons described in Claim 1, this aspect of applicant's claims is inherent to displays having contrast features.

Regarding **Claim 7**, in addition to reasons described in Claim 6, *Jones et al* teaches a shutter strip/segment in its light-transmissive state when the activated image line/cell associated with that strip is dark (column 4, lines 54-59).

Regarding **Claim 8**, in addition to reasons described in Claims 6 respectively, *Jones et al* teaches a shutter in front of the imaging cell comprising a plurality of segments being switchable synchronously between a transparent state and a light absorbing state (column 3, lines 14-28).

Regarding **Claims 9**, in addition to reasons described in Claim 8, *Jones et al* teaches an embodiment of his invention whereby the screen need not switch entirely all at once but may do so in segments (column 5, lines 43-44), and is synchronously switchable such that the front layer is in its transparent state when the projector is projecting an image and in its dark state when the projector is not (column 5, lines 11-24). This is inherently similar to applicant's claim of display wherein plurality of the shutter strips are simultaneously in their light-transmissive states when activated while the other associated imaging lines are deactivated.

Regarding **Claim 16**, in addition to reasons described in Claim 10, *Jones et al* teaches a switching means which functions as a control component for selectively placing the shutter strips in their light-transmissive and light-absorptive states (*see* figures 1a & 1b at 4).

Regarding **Claim 17**, in addition to reasons described in Claim 16, it is inherent the switching means comprises control elements which facilitates the placement of the shutter in their light-transmissive and light-absorptive states.

Regarding **Claim 18**, in addition to reasons described in Claim 17, *Jones et al* teaches a display wherein each control element is operable to provide light that causes the shutter strips/segments to be in the light-transmissive and light-absorptive states (column 3, lines 49-54).

Regarding **Claim 19**, in addition to reasons described in Claim 17, arguments discussed in Claim 6 are also applicable to Claims 19 and 85.

Regarding **Claim 20**, in addition to reasons described in Claim 6, *Jones et al* teaches a shutter in front of the imaging cell, comprising a plurality of segments, which is similar to the laterally separated imaging elements as claimed by applicant (column 3, lines 14-19).

Regarding **Claim 21**, in addition to reasons described in Claim 20, *Jones et al* teaches a display wherein the imaging element is light emissive (claim 1, column 10, lines 53-68).

Regarding **Claim 40**, in addition to reasons described in Claim 1, *Jones et al* teaches imaging and shutter lines which are parallel to one another (figure 4 at 17).

Regarding **Claim 41**, in addition to reasons described in Claim 1, *Jones et al* teaches shutter strips comprising parts of a liquid-crystal structure (column 7, lines 56-59).

Regarding **Claim 42**, in addition to reasons described in Claim 41, *Jones et al* teaches a display wherein the liquid crystal contains a liquid-crystal material capable of being controlled to selectively transmit an image defined by unpolarized light incident on the liquid crystal material (column 8, lines 44-65).

Regarding **Claim 43**, in addition to reasons described in Claim 41, *Jones et al* teaches a display with a liquid crystal material that comprises liquid material, pleochroic dye with a dark and transmissive appearance (column 8, lines 66-67 *to* column 9, lines 1-22).

Regarding **Claim 44**, in addition to reasons described in Claim 43, *Jones et al* teaches that the molecules of the pleochroic dye generally align with the molecules of liquid crystals (column 8, lines 66-67 *to* column 9, line 1).

Regarding Claims **6, 10, 11, 12, 15, 28, 29, 35 and 59,** in addition to arguments discussed in Claims 1, 6, 10, 11, 11, 1, 28, 34 and 57 respectively, arguments discussed in independent claims 1 and 57 are also applicable to claims 6, 10, 11, 12, 15, 28, 29, 35 and 59.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 13-14, 22-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Nakamoto* (U.S. Patent 6,031,328).

Regarding **Claims 13, 14, 22, 23**, in addition to reasons described in Claims 12, 13, 21 and 22 respectively, *Jones et al* does not specifically teach a display with imaging lines that emit light in response to radiation that impinges selectively on light emissive material of that imaging line. On the other hand, *Nakamoto* teaches a phosphor member for each pixel formed on the

surface of the anode electrode facing the cold cathodes (*see Abstract*). This results in the formation of the light source for emitting light for each pixel (*see Abstract*). A well-known liquid crystal display panel for modulating an amount of transmission light for each pixel is provided above the light source (*see Abstract*).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et* and *Nakamoto* because while *Jones et al* teaches a display presenting an image having a shutter which switches between a substantially transparent state and a dark, light absorbing state, *Nakamoto* teaches how a flat panel display device with a light source controls transmission light for each pixel. The motivation for combining these inventions would have been to design a flat panel display device that provides high precision, high brightness, high contrast, and small power consumption.

Regarding **Claim 24**, in addition to reasons described in Claim 22, it is inherent that radiation comprises electrons.

Regarding **Claim 25**, in addition to reasons described in Claim 21, *Jones et al* teaches a potential across the imaging element through the use of a pulsed backlight (claim 1, column 10, lines 53-66).

Regarding **Claim 26**, in addition to reasons described in Claim 20, *Jones et al* does not specifically teach a light valve present in each imaging element. On the other hand, *Nakamoto* teaches a light modulator which controls an amount of transmission of each light emitted from the phosphor member (column 2, lines 47-50).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Nakamoto* because while *Jones et al* teaches a display presenting an image having enhanced contrast which switches between a bright, and dark state, *Nakamoto* teaches how to control the transmission of the light emitted. The motivation for doing so would have been to provide a flat panel display device that has high brightness, high contrast, small power consumption, and high precision.

Regarding **Claim 27**, in addition to reasons described in Claim 26, arguments described in Claim 26 is also applicable to claim 27.

6. **Claims 30-39, 63-65** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Curtin et al* (U.S. Patent 5,686,790).

Regarding **Claim 30**, in addition to reasons described in Claim 1 respectively above, *Jones et al* does not explicitly teach an image-producing component which has a first and second plate structures spaced apart. On the other hand, *Curtin et al* teaches a faceplate, and a backplate which extend parallel to each other in an active display region (column 3, lines 50-57).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Curtin et al* because while *Jones et al* teaches a display presenting an image having enhanced contrast which switches between a bright, and dark state, *Curtin et al* teaches a flat panel display which includes a faceplate and backplate wherein the faceplate includes an active region. The motivation for combining these inventions would have been to produce a display structured to produce or modulate light.

Regarding **Claim 31**, in addition to reasons described in Claim 30 above, *Curtin et al* teaches a flat panel device which includes a flatplate (column 3, lines 50-51).

Regarding **Claims 32** and **33,** in addition to reasons described in Claims 30 and 32 respectively, *Curtin et al* teaches an image producing component (flat panel device) comprising a faceplate, backplate, a cathode means for emitting electrons, and a light-emitting means (*see Curtin et al* at claims 1 & 11, column 27, lines 25-35 *and* column 28, lines 4-8).

Regarding **Claims 34, 37, 38** and **39,** in addition to reasons described in Claims 1, 34, 34 and 38 *respectively, Curtin et al* teaches an image-producing component which is a flat panel device, and this comprises a cathode ray tube display, liquid crystal display, plasma displays, electroluminescent and light-emitting displays (column 5, lines 59-63; column 3, lines 50-60). Furthermore, *Curtin et al* teaches a flat panel display in which electrons are emitted from the

cathode surface toward the phosphor coated interior of the faceplate (column 8, lines 21-28, figure 2A at 202, 203 & 206).

Regarding **Claims 35**, in addition to reasons described in Claim 34 above, *Curtin et al* teaches a scheme for updating the imaging line with the aid of the driver circuitry which causes light emission at the pixels (column 3, lines 65-67 *to* column 4, lines 1-6).

Regarding **Claim 36**, in addition to reasons described in Claim 34 respectively above, *Curtin et al* teaches the presence of a ceramic substrate that is connected with the elements (column 3, lines 65-67 *to* column 4, lines 1-3). This ceramic substrate is naturally made of organic material.

7. **Claims 45 and 53** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Waters et al* (U.S. Patent 4,596,446).

Regarding **Claims 45 and 53**, in addition to reasons described in Claim 43, *Jones et al* teaches a display in which the molecules of the pleochroic dye generally align with the molecules of liquid crystals (column 8, lines 66-67 *to* column 9, line 1). However, *Jones et al* does not teach a display wherein the host liquid crystal material comprises a cholesteric liquid crystal. On the other hand, *Waters et al* teaches a liquid crystal device which comprises a layer of long pitch cholesteric liquid crystal material incorporating a pleochroic dye (*see Waters et al* at Abstract).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Waters et al* because while *Jones et al* teaches how a display with molecules of the pleochroic dye generally align with the molecules of liquid crystals, *Waters et al* teaches how a liquid crystal device with cholesteric liquid crystal material incorporate a pleochroic dye. The motivation for combining these inventions would have been to achieve a sharp transmission-voltage characteristic for rapidly increasing voltages, without hysteresis.

8. **Claim 54-56 and 126** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Curtin et al* (U.S. Patent 5,576,596).

Regarding **Claims 54 and 126**, in addition to reasons described in Claims 41 and 125 respectively, *Jones et al* teaches the presence shutter strips in his liquid-crystal device. However, *Jones et al* does not teach an image-producing component which has a first and second plate structures spaced apart. On the other hand, *Curtin et al Curtin et al* teaches an optical device which contains first (302) and second plates (303), and which are laterally separated from one another by a pattern of ridges (314) situated over the first plate, light-emissive regions (313) situated in spaces between the ridges, electron-emissive elements (309) that maintains the desired spacing between the plates (*see Abstract*).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al's* and *Curtin et al's* inventions because while *Curtin et al* teaches how to improve contrast and color purity in emitting structures with a design of two laterally spaced apart plates, *Jones et*

al teaches a display with shutter strips that helps improve the contrast capability. The motivation for combining these inventions would have been to improve the contrast capability of a display.

Regarding **Claim 55**, in addition to reasons described in Claim 1 above, *Curtin et al* teaches an aspect ratio of average of lateral dimension to maximum thickness of at least 4 (column 4, lines 48-64).

Regarding **Claim 56**, in addition to reasons described in Claim 1 above, *Curtin et al* teaches a CRT display that utilizes a raised black matrix in accordance with the invention (column 3, lines 11-14, figure 2).

9. **Claims 66-81, 84-87, 93-97, 124** and **128-130** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Bird et al* (U.S. Patent 5,483,263).

Regarding **Claims 66 and 129**, *Jones et al* teaches a CRT in Figure 9. However, applicant argues that CRT's do not simultaneously display an image line since CRT's scan each line.

However, flat-panel displays such as plasma and electroluminescent displays do simultaneously display an image line because the column drivers on a flat panel display latch one row of image data at the same time so that when the row strobes, the whole line or row turns on

simultaneously or at once. Furthermore, *Jones et al*'s CRT in Figure 9 is modified, and suggest that those skilled in the art will understand that this invention can be used with other self-luminous displays such as plasma and electroluminescent displays (*see Jones* at column 7, lines 5-9; *see also* Applicant, p.11).

However, *Jones et al* does not teach a control component that utilizes light in causing the shutter strips to be selectively placed in their light-transmissive and light-absorptive states. On the other hand, *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states (column 6, lines 15-16, 32-48, figure 1 at 7-11; *see also* column 5, lines 34-41, figure 2 at 3 & 5; column 10, lines 1-14, figures 8 & 9 at 11(a)-(c) & 35).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Bird et al* in order to design a display which comprises a control component that utilizes light in causing the shutter strips to be selectively placed in their light-transmissive and light-absorptive states because while *Jones et al* teaches a backlit display, a shutter in front of the imaging cell, comprising a plurality of segments, each segment being switchable between a substantially transparent state and a strongly light absorbing state, *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states. The motivation for combining these inventions would have been to reduce the number of components in the

design of the display because this design corresponds to a unique arrangement of photosensitive elements (*see generally* column 1, lines 25-35).

Regarding **Claim 67**, in addition to reasons described in Claim 66, *Jones et al* teaches that the shutter in front of the imaging cell comprises a plurality of segments, each being switchable between a substantially transparent state and a strongly light absorbing state (column 3, lines 14-17). Furthermore, *Jones et al* teaches the transmission of a part of the ambient light while it is in its light transmissive state, and absorbs portions of the ambient while in its light absorptive state (column 4, lines 54-68 *to* column 5, lines 1-29, figures 1a, 1b, 2a, 2b, 7a & 7b).

Regarding **Claim 68**, in addition to reasons described in Claim 67, *Jones et al* teaches a method wherein the shutter transmits a portion of the ambient light being at least 0.1 (column 4, lines 24-30).

Regarding **Claim 69**, in addition to reasons described in Claim 66, *Jones et al* teaches a shutter strip that appears dark when it is in its light-absorptive state (column 4, lines 41-42, figure 1b at 3b).

Regarding **Claim 70**, in addition to reasons described in Claim 66, this aspect of applicant's claims is inherent to displays having contrast features.

Regarding **Claim 71**, in addition to reasons described in Claims 66, it is inherent the switching means comprises control elements which facilitates the placement of the shutter in their light-transmissive and light-absorptive states.

Regarding **Claim 72**, in addition to reasons described in Claim 71, *Jones et al* teaches a display wherein each control element is operable to provide light that causes the shutter strips/segments to be in the light-transmissive and light-absorptive states (column 3, lines 49-54).

Regarding **Claim 74**, in addition to reasons described in Claim 73, *Jones et al* teaches a switching means which functions as a control component for selectively placing the shutter strips in their light-transmissive and light-absorptive states (*see* figures 1a & 1b at 4).

Regarding **Claim 76**, in addition to reasons described in Claim 75, *Jones et al* teaches a shutter strip/segment in its light-transmissive state when the activated image line/cell associated with that strip is dark (column 4, lines 54-59).

Regarding **Claim 77**, in addition to reasons described in Claim 75, *Jones et al* teaches a shutter in front of the imaging cell comprising a plurality of segments being switchable synchronously between a transparent state and a light absorbing state (column 3, lines 14-28).

Regarding **Claim 78**, in addition to reasons described in Claim 77, *Jones et al* teaches an embodiment of his invention whereby the screen need not switch entirely all at once but may do so in segments (column 5, lines 43-44), and is synchronously switchable such that the front layer is in its transparent state when the projector is projecting an image and in its dark state when the projector is not (column 5, lines 11-24). This is inherently similar to applicant's claim of display wherein plurality of the shutter strips are simultaneously in their light-transmissive states when activated while the other associated imaging lines are deactivated.

Regarding **Claim 85**, in addition to reasons described in Claim 80, arguments discussed in Claim 6 are also applicable to Claims 19 and 85.

Regarding **Claim 86**, in addition to reasons described in Claim 71, *Jones et al* teaches a shutter in front of the imaging cell, comprising a plurality of segments, which is similar to the laterally separated imaging elements as claimed by applicant (column 3, lines 14-19).

Regarding **Claim 87**, in addition to reasons described in Claim 86 respectively, *Jones et al* teaches a display wherein the imaging element is light emissive (claim 1, column 10, lines 53-68).

Regarding **Claim 95**, in addition to reasons described in Claim 66, *Jones et al* teaches shutter strips comprising parts of a liquid-crystal structure (column 7, lines 56-59).

Regarding **Claim 96**, in addition to reasons described in Claim 95, *Jones et al* teaches a display wherein the liquid crystal contains a liquid-crystal material capable of being controlled to selectively transmit an image defined by unpolarized light incident on the liquid crystal material (column 8, lines 44-65).

Regarding **Claim 97**, in addition to reasons described in Claim 96, *Jones et al* teaches a display with a liquid crystal material that comprises liquid material, pleochroic dye with a dark and transmissive appearance (column 8, lines 66-67 *to* column 9, lines 1-22).

Regarding Claims **73, 75, 79, 80, 81, 84, 93, 94, 128** and **130**, in addition to arguments discussed in Claims 72, 66, 71, 79, 80, 80, 66, 93, 127 and 129 respectively, arguments discussed in independent claims 66 and 129 are also applicable to claims 73, 75, 79, 80, 81, 84, 93, 94, 119, 128, and 130.

Regarding **Claim 124**, in addition to reasons described in Claims 66, *Jones et al* teaches imaging and shutter lines which are parallel to one another (figure 4 at 17).

10. **Claims 82, 83, 88-92** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Bird et al* (U.S. Patent 5,483,263), and further in view of *Nakamoto* (U.S. Patent 6,031,328).

Regarding **Claims 82, 83, 88,** in addition to reasons described in Claims 80, 82 and 87 respectively, neither *Jones et al* nor *Bird et al* specifically teach a display with imaging lines that emit light in response to radiation that impinges selectively on light emissive material of that imaging line. On the other hand, *Nakamoto* teaches a phosphor member for each pixel formed on the surface of the anode electrode facing the cold cathodes (*see Abstract*). This results in the formation of the light source for emitting light for each pixel (*see Abstract*). a well-known liquid crystal display panel for modulating an amount of transmission light for each pixel is provided above the light source (*see Abstract*).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al, Bird et al* and *Nakamoto* because while *Jones et al* teaches a display presenting an image having a shutter which switches between a substantially transparent state and a dark, light absorbing state, and *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states, *Nakamoto* teaches how a flat panel display device with a light source controls transmission light for each pixel. The motivation for combining these inventions would have been to design a flat panel display device that provides high precision, high brightness, high contrast, and small power consumption.

Regarding **Claim 89**, in addition to reasons described in Claim 88, it is inherent that radiation comprises electrons.

Regarding **Claim 90**, in addition to reasons described in Claim 87, *Jones et al* teaches a potential across the imaging element through the use of a pulsed backlight (claim 1, column 10, lines 53-66).

Regarding **Claim 91**, in addition to reasons described in Claim 86, neither *Jones et al* nor *Bird et al* teach a light valve present in each imaging element. On the other hand, *Nakamoto* teaches a light modulator which controls an amount of transmission of each light emitted from the phosphor member (column 2, lines 47-50).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al* and *Nakamoto* because while *Jones et al* teaches a display presenting an image having enhanced contrast which switches between a bright, and dark state, and *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states, *Nakamoto* teaches how to control the transmission of the light emitted. The motivation for doing so would have been to provide a flat panel display device that has high brightness, high contrast, small power consumption, and high precision.

Regarding **Claim 92**, in addition to reasons described in Claim 91, arguments described in Claim 26 are also applicable to claim 92.

11. Claims 115-118, 119 and 120-123 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Bird et al* (U.S. Patent 5,483,263), and further in view of in view of *Curtin et al* (U.S. Patent 5,686,790).

Regarding **Claims 115**, in addition to reasons described in Claim 66 above, neither *Jones et al* nor *Bird et al* teach an image-producing component which has a first and second plate structures spaced apart. On the other hand, *Curtin et al* teaches a faceplate, and a backplate which extend parallel to each other in an active display region (column 3, lines 50-57).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al*, *Bird et al* and *Curtin et al* because while *Jones et al* teaches a display presenting an image having enhanced contrast which switches between a bright, and dark state, and *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states, *Curtin et al* teaches a flat panel display which includes a faceplate and backplate wherein the faceplate includes an active region. The motivation for combining these inventions would have been to produce a display structured to produce or modulate light.

Regarding **Claims 116** and **117**, in addition to reasons described in Claims 115 and 116 respectively, *Curtin et al* teaches an image producing component (flat panel device) comprising a faceplate, backplate, a cathode means for emitting electrons, and a light-emitting means (*see Curtin et al* at claims 1 & 11, column 27, lines 25-35 *and* column 28, lines 4-8).

Regarding **Claims 118, 121, 122, and 123,** in addition to reasons described in Claims 66, 118, 118, and 122 respectively, *Curtin et al* teaches an image-producing component which is a flat panel device, and this comprises a cathode ray tube display, liquid crystal display, plasma displays, electroluminescent and light-emitting displays (column 5, lines 59-63; column 3, lines 50-60). Furthermore, *Curtin et al* teaches a flat panel display in which electrons are emitted from the cathode surface toward the phosphor coated interior of the faceplate (column 8, lines 21-28, figure 2A at 202, 203 & 206).

Regarding **Claim 120**, in addition to reasons described in Claim 119 respectively above, *Curtin et al* teaches the presence of a ceramic substrate that is connected with the elements (column 3, lines 65-67 *to* column 4, lines 1-3). This ceramic substrate is naturally made of organic material.

Regarding **Claim 119**, in addition to arguments discussed in 118, arguments discussed in claim 1 above also applies to claim 119.

12. **Claim 98** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Jones et al* (U.S. Patent 5,175,637) in view of *Bird et al* (U.S. Patent 5,483,263), and further in view of *Waters et al* (U.S. Patent 4,596,446).

Regarding **Claim 98**, in addition to reasons described in Claim 96, *Jones et al* teaches a display in which the molecules of the pleochroic dye generally align with the molecules of liquid crystals (column 8, lines 66-67 *to* column 9, line 1). However, neither *Jones et al* nor *Bird et al* teach a display wherein the host liquid crystal material comprises a cholesteric liquid crystal. On the other hand, *Waters et al* teaches a liquid crystal device which comprises a layer of long pitch cholesteric liquid crystal material incorporating a pleochroic dye (*see Waters et al* at Abstract).

Thus, it would have been obvious to a person of ordinary skill in the art to combine *Jones et al*, *Bird et al* and *Waters et al* because while *Jones et al* teaches how a display with molecules of the pleochroic dye generally align with the molecules of liquid crystals, and *Bird et al* teaches an electro-optic device wherein an electro-optically controlled element (8) utilizes light in causing the shutter strips to be placed in their light-transmissive and light-absorptive states, *Waters et al* teaches how a liquid crystal device with cholesteric liquid crystal material incorporate a pleochroic dye. The motivation for combining these inventions would have been to achieve a sharp transmission-voltage characteristic for rapidly increasing voltages, without hysteresis.

Allowable Subject Matter

13. **Claims 46-52, 99-105 and 106-114** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

14. Applicant's arguments as to Claims 81, 82, 84 and 86 filed on December 22, 2000 have been fully considered but they are not persuasive.

Regarding **Claims 1, 57, 125 and 127,** applicant argues that some of *Jones*' displays have shutters and, in some of *Jones'* shuttered displays, the shutters are segmented. Applicant refers to the displays of Figs. 9, 10b, and 11 in Jones' to show segmented shutters. Furthermore, applicant asserts that the image portions produced by the light provided by the pixels or subpixels of each imaging line in the display of Fig. 9 of *Jones* are displayed sequentially in time, while applicant contends that his invention requires that largely all of the image part produced by the light provided by each imaging line be displayed largely simultaneously at any time when that image part is being displayed (*see* Applicant's arguments, p. 12). However, *Jones* clearly states that although the display in Fig. 9 is shown as a CRT display, those skilled in the art will understand that this invention can be used with other self-luminous displays such as plasma and electroluminescent displays (*see Jones* at column 7, lines 5-9; *see also* Applicant, p.11 wherein a row of image line is simultaneously displayed. This simultaneous display of an image line is

inherent in flat panel displays due to the operation of row and column drivers as is known in the art). Hence, this aspect of applicant's arguments is not persuasive.

Claims 2-12, 13-14, 15-21, 22, 27, 28, 29, 30-39, 40-44, 45, 53, 54-56, 58 and 59 all variously depend (directly or indirectly) from independent claims 1, 57, 125 and 127. Hence arguments discussed in independent claims 1, 57, 125 and 127 in the rejection and response to arguments above are also applicable to dependent claims 2-12, 15-21, 28, 29, 30-39, 40-44, 58 and 59.

Applicant's arguments with respect to **Claims 66, 129 and 130** have been considered but are moot in view of the new ground(s) of rejection. In response to all applicants arguments concerning these claims, please see rejection discussed above.

Claims 67-81, 82, 83, 84-87, 88-92, 93-97, 98, 124, 126, 128 and 130 all variously depend (directly or indirectly) from independent claims 66 and 129. Applicant's arguments with respect to these dependent Claims 67-81, 84-87, 93-97, 124, 128 and 130 have been considered but are moot in view of the new ground(s) of rejection associated with independent claims 66 and 129. In response to all applicants arguments concerning these claims, please see rejection discussed above.

Applicant's arguments with respect to **Claims 115-118, 119 and 120-123** have been considered but are moot in view of the new ground(s) of rejection. In response to all applicants arguments concerning these claims, please see rejection discussed above.

Applicant's arguments with respect to **Claims 46-52, 99-105 and 106-114** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. The examiner can normally be reached on Monday through Friday from 9:00 a.m. to 5:30 a.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Saras, can be reached on (703) 305-9720. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-6606.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Uchendu O. Anyaso

04/07/2001

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